

Signs, Labels, and Tags

Los Alamos National Laboratory

Laboratory Implementation Guidance LIG 402-100-01.2

Effective Date: November 19, 1999 (Revised February 13, 2001)

Nonmandatory Document

1.0 Introduction

1.1 Background

Signs, labels, and tags (SLTs) are an important element of operations communications at the Laboratory. They help to ensure that critical information is transmitted to workers and transient personnel in the workplace.

SLTs are one of many administrative mechanisms by which expectations are communicated to LANL workers and visitors. As such, they must always be integrated with the policies, procedures, training, instructions, requirements, and guidance of the Laboratory, facility, or operation. A sign should never be the sole mechanism to provide operational instruction—it should only serve as a reminder of information already transmitted by other, more extensive, means of communication. SLTs are also commonly used to communicate specific information about hazards, controls, and status associated with operations and locations. The Sign Standards Committee has been established to provide support to the Laboratory on issues regarding SLTs (see Attachment 1).

This Laboratory implementation guidance (LIG) supports the requirements addressed in the Laboratory implementation requirements ([LIR 402-100-01](#)) and the information in the “Sign Catalog.”

This LIG is in effect on the date of issue.

1.2 In this Document

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2.0 Purpose

This document provides guidance on the appropriate use, design or selection, acquisition, posting, and maintenance of signs, labels, and tags to assure the safety, reliability, and security of Laboratory operations and activities.

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3.0 Scope

Laboratory employees, subcontract personnel, and business visitors are the target audience for LANL SLTs. **Note:** This LIG does not apply to operator aid postings.

4.0 Definitions

4.1 Acronyms

The following unique acronyms are used in this document:

GPO—Government Printing Office

LIG—Laboratory implementation guidance

LIR—Laboratory implementation requirements

SLT—sign, label, and tag

4.2 Terms

The following table lists and explains terms used throughout this document.

The word	can have any or all of the following characteristics and uses:
sign	<ul style="list-style-type: none">• word- or picture-based communication• made of sturdy materials for posting• size, shape, location, and format are appropriate to the purpose within the requirements of this document• generally used where legibility at 5 feet or more is needed
label	<ul style="list-style-type: none">• word- or picture-based communication• smaller than a sign• typically, legible at less than 5 feet• flexible format• often self-adhesive• posted adjacent to or on the specific location or article of interest• used to identify an item or its contents or to provide specific guidance in its operation
tag	<ul style="list-style-type: none">• word- or picture-based communication• smaller than a sign• typically, legible at less than 2 feet• able to survive rough handling and harsh environment• often used as an appendage on a wire, string, chain, etc.• may be used to identify a container's contents when a sign or label is inappropriate• is attached to a specific item or location

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4.2 Terms (cont.)

The word	can have any or all of the following characteristics and uses:
special-category sign, label, or tag	<ul style="list-style-type: none">• word-based communication• used to convey operations-only instructions, status, equipment identification, etc.• not used for environment, safety, or health information• examples, “turn clockwise to open”, “off”, “on”, “power is on when light is red”, “DF-004”, “LP-27”, “HM-5”• does not need to be approved by Sign Standards Committee
permanent sign, label, or tag	<ul style="list-style-type: none">• intended to last indefinitely• resistant to harsh weather and rough handling
temporary, hand-made sign, label, or tag	<ul style="list-style-type: none">• typically, generated by typewriter, computer, label maker, or hand printed• intended to last a short time and often used only until a permanent sign is received (3 months maximum)• does not need to be approved by the Sign Standards Committee

5.0 Guidance

5.1 Appropriate Use

Signs, labels, and tags are used most appropriately to reflect expectations already expressed in policies, procedures, training, instructions, requirements, and guidance, whether institutional or site- or operation-specific. A SLT should never be the mechanism by which official instructions, information, or expectations are initially or primarily communicated to the workforce.

Using an approved SLT in other than a mandated situation is not prohibited, but it should be carefully considered by the user to prevent unnecessary proliferation of signs, labels, or tags (“sign pollution”). Too many signs in an area may be as unproductive as too few because it may lead the worker to ignore all the postings, rather than take the time to figure out which are relevant.

5.1.1 Standard SLTs

Standard SLTs are those identified in the Laboratory “Sign Catalog.” These items have been selected for their potential for broad usage across the Laboratory. In selecting the listed items, the need for unique language was balanced against consistent usage that would be interpreted consistently throughout the Laboratory. Additionally, off-the-shelf, commercially available SLTs were selected as much as possible to save time and money when obtaining appropriate SLTs.

Notes:

- (1) Catalogs of vendors listed in the “Legend for the Sign Catalog” are the first place to check for a sign, label, or tag that is not in the catalog (see Attachment 2, Sec. 9, for the “Legend for the Sign Catalog”).
- (2) Labels that are placed by manufacturers on their products are not subject to review by the Sign Committee.

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5.1.2 Site-specific SLTs

In developing the “Sign Catalog,” it was recognized that there were site-specific activities or features that could not be accommodated by the standard SLTs. Special approval of a unique SLT (other than temporary) must be requested of the Sign Standards Committee (LIR 402-100-01, Sec. 6.2.3). **Guidance note:** Laboratory personnel may use the SLT Request Form in Attachment 3.

The most common reason for denying a unique SLT request is that there is already a sufficient item in the “Sign Catalog.” Some requests, however, were recognized as having sufficiently broad application that they were added to the “Sign Catalog” and have become a standard SLT.

5.1.3 Special SLTs

Special SLTs are those generally used to identify or operate equipment, systems, or components. While there is little perceived value in standardizing these SLTs across the Laboratory, their use within a system, such as the LANSCE accelerator, should be controlled for consistency within that system. Such SLTs help to

- ensure that personnel can positively identify equipment, and
- reduce operator and maintenance errors resulting from incorrect identification of equipment.

If there is an equipment-designator type of sign in the Catalog that fits the situation (for example, an electrical equipment voltage marking sign), then that SLT is the preferred sign to use. If, however, there is no such sign available, an SLT that fits the description of “special” may be developed and used *without* having it reviewed by the Sign Committee.

These SLTs may

- serialize ventilation systems features;
- identify control panel switches, indicators, knobs and dials;
- identify elements of engineering or experimental systems; or
- be instruction or status labels (e.g., “On/Off,” “Power on when light is red,” “Turn clockwise to open”).

These SLTs must accurately reflect the instructions in procedures or training (see Sec. 6.5 in LIR 402-100-01). Their language should be concise but clear.

Special SLTs may be color coded to reflect different sub-systems. They should be of sturdy construction to assure that they will provide reliable information for the length of their anticipated service life, with special attention paid to corrosive environments. Their design should take into account the complexity of the system, the level of hazard presented, consequence of an error in its use or operation, and overall importance to work being performed.

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SLTs (cont.)

Identifying SLTs should be considered, at a minimum, for use on the following equipment:

- valves and dampers;
- buses, motor control centers and local power panels, breakers; switches, and instrument panel doors;
- fuse blocks, relays, terminal boards, and other components inside electrical panels;
- major equipment, such as tanks, pumps, and compressors;
- gauges and instruments;
- racks and cabinets (including internal components such as relays and terminals);
- emergency equipment; and
- fire-protection systems.

5.1.4 Temporary SLTs

Temporary signs should be considered when activities are so sudden or short-lived that the lead time needed to select or obtain standard, site-specific, or special SLTs is too long compared to the useful life of the sign, label, or tag.

LIR 402-100-01 permits the use of temporary SLTs as long as they are signed and dated (thus, questions about the language or application can be directed to the appropriate authority, and the length of posting or usage can be verified as within the three-month limit).

The design and use of temporary SLTs should follow guidelines included in this LIG regarding contrasting print and background; size; letter size; restricted use of the words “danger,” “warning,” and “caution”; placement; and construction.

5.2 Design and Selection of Materials

In 1998, the criteria for formatting safety signs changed extensively in ANSI Z535.1-5. Rather than cause a wholesale replacement of signs designed with the previous format, the Sign Committee decided to phase-in the new format on a case-by-case basis as sections in the Catalog are periodically reviewed and revised and as signs with the new format become commercially available. As the new signs are approved for Laboratory use for *new or updated* applications, the new format will be recommended for use. The Sign Committee anticipates that this changeover will take approximately 10 years. In the meantime, there is *no* requirement to replace previously approved signs.

Human factors questions should be directed to the Sign Standards Committee, the Ergonomics Committee, or the Industrial Hygiene and Safety Group (ESH-5).

Select materials for construction of SLTs that are compatible with the environment in which they will be used; that is, some signs, labels, or tags may need to be made of materials that are resistant to heat, chemicals, water, etc. (for example, chloride-free labels for stainless-steel piping).

Consider stenciling information directly on equipment and components to eliminate the need for a sign, label or tag.

Note: Stencils for information to be used Labwide should have their language, size, and colors cleared through the Sign Standards Committee.

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5.2.1 Language

Any language using the words “Danger,” “Warning,” or “Caution,” should be reviewed by the Sign Standards Committee to assure proper application of these terms. See Attachment 4 for an explanation of the proper usage.

Use only abbreviations that are readily understood and reflect standard procedures, local practice, and training; and make such abbreviations standard throughout the facility or operation.

Common Laboratory jargon can usually be tolerated, especially where it originates in the underlying documentation.

5.2.2 Colors

Colors for special SLTs should be carefully selected to provide appropriate “readability” in the specific location. Thus all conditions of ambient lighting, print and background color contrast, contrast with color of wall or other posting surface should be considered.

The potential for the SLT to become obscured by grime should be considered.

Note: If the sign or label is engraved, the lettering should be dark with a lighter background so it can be wiped clean.

Although color coding may be considered desirable, a significant percentage of any general population has visual impairment in their ability to discern various colors, so words should always be used in addition to colors to indicate status or convey information.

For special SLTs, the appropriate contrast between print and background will assist readers, as well. For example, black print on a yellow or white background is more readable than red print on a green background.

5.2.3 Size

The Laboratory standard of 7 X 10 for interior signs and 10 X 14 for exterior signs should be followed as closely as practical. Minor deviations from these dimensions are not critical but the impulse to make each ensuing sign bigger than those already posted should be resisted. These sizes were selected to accommodate normal interior and exterior viewing distances.

Note: See Attachment 5 for recommended sizing for Laboratory SLTs.

SLTs that require specific information to be entered at the location should be designed to accommodate hand-printed information.

5.3 Ordering SLTs

SLTs may be ordered by purchase order or through JIT, JCNNM sign shop (7-4231) or through IM-4, 667-4034, for the GPO (Government Printing Office).

Note: Using a commercial sign that is not listed in the “Sign Catalog” requires approval by the Sign Standards Committee (see Sec. 6.2, LIR 401-100-01). Using the sources listed in the “Sign Catalog,” however, is not mandatory. Other sources may be used as long as the SLT matches the specifications in the catalog.

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5.3.1. Commercial SLTs

Commercial SLTs are off-the-shelf items. In the “Sign Catalog,” these signs are noted by their commercial source in the cross reference column (see Attachment 2, “Legend for the Sign Catalog,” for a listing of commercial sources). These vendor catalogs are the first place to check for signs, labels, or tags not listed in the “Sign Catalog.” There are several reasons for using a commercially available sign; they are

- readily available,
 - generally lower in price, and
 - the wording would be consistent for the listed application.
-

5.3.2. Custom SLTs

Custom SLTs should only be considered when a commercial sign is not available. Before deciding on a custom sign, consider the following:

- Price—Is there a set-up fee? How much? Who pays?
- Quantity—Do you only need a few or can you use a minimum order quantity ?
- Lead-time—How long will the sign take to manufacture and deliver? Is it quicker to obtain a commercial sign?

Note: Many companies that have commercial signs have the ability to make some types of custom signs.

5.3.3. GPO SLTs

Another option for ordering customized SLTs is through the GPO; call IM-4 (667-4034) to order from GPO. GPO can make labels, vinyl signs, and paper signs. They can also make a roll of labels. Lead time on GPO orders is usually 9 to 12 weeks. You will need a good camera-ready copy of the SLT that you want printed.

Note: GPO does not make metal, plastic, wood or fiberglass SLTs.

5.3.4. Furnished SLTs

SLTs listed as (XX) in the “Sign Catalog” can be obtained by contacting the organization listed in the catalog.

5.3.5. Approval SLTs

Contact the group listed in the “Sign Catalog” to obtain written approval for (ZZ) signs, then provide the vendor with the approval.

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5.4 Posting or Attaching SLTs

Care should be taken to prevent signs from being hidden or obscured by open or closed doors, clothing, equipment, etc. Assure that labels or tags on equipment will not interfere with the operation of relief valves, air intakes, or other equipment features.

When posting or attaching SLTs,

- apply self-adhesive labels to clean, dry surfaces;
- mount labels directly on the surface of equipment or structures or on a piece of rigid material on the surface or in close proximity to the surface;

Note: Center the message of the SLT at eye level, if possible.

- attach SLTs (usually to specific articles, bundles, drums, cylinders, etc.) securely enough to withstand rough handling; and
- ensure that fastening devices and SLT attachment points are strong enough to withstand abrasion damage from the wind and use all attachment points to prevent movement-induced fatigue of the SLT or fastening device.

Caution: Do not compromise the integrity of any containment system (e.g., fire doors, pressure vessels) with SLT fastening devices that penetrate, such as screws, nails, or bolts. Consider using adhesive-based fastening devices in these situations.

5.5 Maintenance

SLTs should be maintained to ensure their legibility.

A periodic inspection and maintenance program should be considered to mitigate the following possibilities.

- SLTs exposed to harsh environments (such as wind-blown dust, caustic atmospheres, or strong sunlight) may weather, fade, or become obscured.
- SLTs may also become detached from their intended location.

When possible, those performing the inspection and maintenance should carry a variety of appropriate SLTs, fastening devices, and cleaning agents (e.g., all-purpose cleaner) with them to immediately correct deficiencies.

When inspecting outdoor SLTs, consider inspecting those SLTs that face south on a more frequent basis because of the intense amount of sunlight from that direction.

The periodic inspection and maintenance program should also consider the continued applicability of the SLT

- to prevent overposting of areas that could lead to “sign pollution,” and
- to ensure that the hazard or concern for which the SLT was posted is still present.

Note: If manufacturers’ labels become worn, torn, or otherwise difficult to read, the information may be copied and replaced on the equipment or machinery without consulting the Sign Committee.

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5.6 Disposing of SLTs

Consideration should be given to the proper disposal of SLTs. Depending on the SLT material, proper disposal could include obliterating or defacing the text and symbols on the SLT or shredding it.

This will assure that individuals will not be inadvertently led to believe that hazards exist where, in fact, they do not (e.g., radioactive material labels improperly disposed of in sanitary landfills).

If there is the possibility that the SLT has been contaminated (e.g., radioactive material or a carcinogenic chemical), contact ESH-1 or ESH-5, as appropriate, for further guidance on determining if the hazard is present, and if so, how to properly dispose of the SLT.

CAUTION: Exit signs containing tritium should not be disposed of in the sanitary waste stream.

Disposal of tritium exit signs needs to be managed through each Facility Management Unit under the facility work control process.

6.0 References

6.1 Documents

“Signs, Labels, and Tags,” Los Alamos Laboratory document LIR 401-100-01.

6.2 Document Ownership

HSR-5, 667-5231, is the OIC for this document.

7.0 Attachments

Attachment 1: Sign Standards Committee Charter

Attachment 2: “Legend for the Sign Catalog”

Attachment 3: Sign, Label, Tag Request (Form 2012)

Attachment 4: Special Language Usage and Meanings

Attachment 5: Suggested Guidelines for Sizes of Signs, Labels, and Tags (Form 2027)

Attachment 6: Hazard Information for Non-Residents and Entry Control Signs (Form 2028)

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Attachment 1

Sign Standards Committee Charter

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ATTACHMENT 1: Sign Standards Committee Charter

1. The Sign Standards Committee is chaired by an appointee of the OIC and consists of one authorized representative (a division employee appointed by the division leader and constituting an authority on Laboratory-wide issues of concern to that division) from each of the following organizations:

- Environmental, Safety, and Health (ESH)
- Facility & Waste Operations (FWO)
- Business Operations (BUS)

A quorum consists of three members. The views of the technical division having jurisdiction associated with an issue must be represented.

Note: Interested employees throughout the Laboratory are encouraged to participate in the work of the committee.

2. Division representatives

- ensure that approvals for signs, labels, and tags accurately reflect Laboratory and regulatory requirements; and
- are authorized to speak for their respective division.

3. The Committee shall

- review, assess, and determine the design and use of signs, labels, and tags for the Laboratory;
- ensure that design is applicable to the widest possible field of users at the Laboratory;
- ensure that procedures and documentation associated with sign standards reflect the best interests and needs of the Laboratory;
- provide guidance to the Laboratory on effective use of signs, labels, and tags;
- meet at least quarterly to review requests for special signs and to address other business of the committee;
- review Laboratory- or site-specific signs, labels, and tags to determine whether several specific designs required by different organizations can be coordinated into one design;
- communicate sign, label, and tag approval/denial decisions to the requesting organization through formal memoranda;
- seek appropriate technical guidance to help ensure compliance with codes, standards, and regulations;
- determine necessary revisions to signs, labels, and tags and to the "Sign Catalog";
- provide expert review of requests for nonstandard signs, labels, and tags; and
- consider economic effects in its decisions.

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Sign Standards Committee Charter

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4. The Chairperson for the Sign Standards Committee shall
 - direct the issuance of sign instructions (presented in the “Sign Catalog”);
 - ensure that required membership is maintained on the committee and request new division representatives if representation at meetings is not consistent;
 - elevate policy disagreements within the committee to the appropriate levels of management;
 - exercise signature authority on behalf of the committee;
 - ensure representatives of pertinent technical disciplines (other than those represented by the FWO, ESH, and BUS committee members) serve as ad hoc members of the committee when it reviews issues that may arise infrequently.
 5. The BUS representative on the Sign Standards Committee shall
 - remain knowledgeable of the acquisition process for signs, labels, and tags; and
 - be aware of existing sources of supply for standard signs, labels, and tags.
-

MEMBERS OF THE SIGN STANDARDS COMMITTEE

January 2001

Required Members

Larry Bays, Chairperson, FWO-SEM, MS M703, 667-5712
Bill Eisele, ESH-12, MS K483, 667-7832
Ron Christian, FWO-SEM, MS M702, 667-4265
Donna Peterson, BUS-2, MS E584, 665-3480

Ex-Officios

James Merhege, JCNNM, MS A199, 665-2988
Jean Dawson, AA-2, MS G783, 665-4346
Patty Mahoney, ESH-3, MS P908, 665-8994
Rubén Rangel, ESH-12, MS K483, 667-2146
Mary Carol Williams, CCN-18, MS B252, 665-5880

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Attachment 2

Legend for the Sign Catalog

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Note: This section is hot linked in the [SLT Catalog Menu](#) as an insert.

Legend for the “Sign Catalog”

This is the current “Sign Catalog.” Organizations may make and distribute copies of the catalog, as needed, but users are responsible for ensuring that they are using the most current information.

The catalog is organized by subject matter as follows:

Category	File
Building/structures	build
Chemical/biological hazards	chemhaz
Chemical labeling	chemlablg
Compressed gases	compgas
Criticality	critical
Electrical	elect
ES&H posters	ES&H post
Explosives	explos
Fire protection	firepro
Health general	health
Piping	piping
Quality/calibration	qualcal
Radiation, ionizing	radion
Radiation, non ionizing	radnon
Safety, OSHA construction	safecon
Safety, OSHA general	safegen
Security	security
Traffic/parking	traffic
Transportation	transptn
Waste/environmental	waste

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The following chart explains the columns in the “Sign Catalog.”

Column No.	Explanation																		
Top line of each section	Each category of the catalog is identified with the contact group (authority) that should be consulted for assistance in determining requirements.																		
1: SLT #	<ul style="list-style-type: none">A number is listed for each sign, label, and tag.When the first letters of the order number are LA—order from the In-Plant Store (7-4333) or a listed supplier. Note: The listed commercial supplier need not be used as long as the SLT meets the listed description. XX—order from the contact group listed in the catalog. ZZ—obtain written approval (email is acceptable) from the contact group listed in the catalog and order from the supplier, as listed.If an internal fabrication source (such as ESH-5 or S-3) is specified in the “Remarks” column, contact that organization directly to obtain the sign, label, or tag.																		
2: Message	The message of the sign is listed exactly. If the sign contains too much text to be listed in the catalog or if the mandated message includes specific or unique text (as in a list of authorized users for a specific machine), the identity of the sign may be shown in parentheses as a reference. Where specific language is identified, it must be used.*																		
3: Type/Form	<p>The standard Laboratory format of the sign is identified. The element that precedes the slash symbol (/) designates the type of sign, label, or tag. The element that follows the slash symbol designates the material of fabrication. The code used in this column is as follows:</p> <table><thead><tr><th>Type</th><th>Material</th></tr></thead><tbody><tr><td>S sign</td><td>S steel, aluminum</td></tr><tr><td>I insert</td><td>F fiber glass</td></tr><tr><td>M metal tag</td><td>V vinyl adhesive</td></tr><tr><td>T tape</td><td>C cardboard/paper</td></tr><tr><td>L label</td><td>P polyester, plastic</td></tr><tr><td>P paper tag</td><td>W wood</td></tr><tr><td>F floor stand</td><td><s> stencil</td></tr><tr><td></td><td>L laminated paper</td></tr></tbody></table>	Type	Material	S sign	S steel, aluminum	I insert	F fiber glass	M metal tag	V vinyl adhesive	T tape	C cardboard/paper	L label	P polyester, plastic	P paper tag	W wood	F floor stand	<s> stencil		L laminated paper
Type	Material																		
S sign	S steel, aluminum																		
I insert	F fiber glass																		
M metal tag	V vinyl adhesive																		
T tape	C cardboard/paper																		
L label	P polyester, plastic																		
P paper tag	W wood																		
F floor stand	<s> stencil																		
	L laminated paper																		

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Column	Explanation									
4: Size (HxL) (inches)	<ul style="list-style-type: none">The sign size is listed in inches. The first number designates the overall height; the second number, the width. Size selection is based on the following order of importance:<ol style="list-style-type: none">size and shape mandated by codes, standards, and regulations;commercial availability; andnominal sizes as set forth in Section 6.1 of Laboratory document LIR402-100-01.0 “Signs, Labels, and Tags.”The size of the lettering should be in proportion to the overall size of the sign for ease of readability.									
5: Colors (print/back-ground)	<p>Standard colors are specified with the first element being the print color and the second element being the color of the background. Colors associated with specific warning words outlined in ANSI Z35.1, such as “Danger,” “Warning,” “Caution,” or “Notice,” must conform to the ANSI requirements. The code used in this column is as follows:</p> <table><tr><td>B—black</td><td>Y—yellow</td><td>R—red</td></tr><tr><td>Bl—blue</td><td>O—orange</td><td>P—pink</td></tr><tr><td>S—silver</td><td>M—magenta</td><td>G—green</td></tr></table>	B—black	Y—yellow	R—red	Bl—blue	O—orange	P—pink	S—silver	M—magenta	G—green
B—black	Y—yellow	R—red								
Bl—blue	O—orange	P—pink								
S—silver	M—magenta	G—green								
6: Where needed	Posting information (that is, where and how the sign, label, or tag should be posted).*									
7: Requirements	Requirement sources (that is, OSHA, EPA, DOE, etc.) for signs are identified. Insofar as room permits, specific paragraphs or sections of a document are identified. Because the “Where Needed” column is a summary of requirements, the specific document should be consulted to accurately identify the need for a specific sign, label, or tag or any special applications, restrictions, or exemptions from the requirement. Consultation with the contact group is recommended.									
8: Remarks	The “Remarks” column contains any other pertinent information or requirements that apply to the use of the specific sign, label, or tag. Special restrictions or instructions on specific signs are noted in this column.									

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Column	Explanation			
9: Cross reference	Commercial vendor and stock number sign sources.			
	<i>Through Fisher (667-4333):</i>	<i>Purchase Requisition:</i>		
	AC	Accu-Form	AP	Atomic Products
	B	Brady	CH	Champion
	BX	Baxter (now VW&R)	DA	Defense Apparel
	CR	Carlton Industries	IN	Innovative Products
	DS	Direct Safety	MT	Mountain Tool
	EM	Emed	N	Nuclear Power Outfitters
	LE	Legible Signs		
	LM	Label Master		<i>Through IM-4:</i>
	LS	Lab Safety	GPO	Government Printing Office
	MZ	Marzetta (now Accu-form)		
	NM	National Marker		
	RE	ReadyMade		
	SS	Safety Signs		
	SE	Seton		
	ST	Stonehouse		
	10: Date of last review	Most recent date reviewed by SLT committee or subject matter experts.		

- * The second and sixth columns, identifying the “Message” and “Where Needed,” respectively, bear the following code letters:

Letter code	Explanation
M	Mandatory by external codes, standards, or regulations
R	Required by Laboratory
S	<p>Standard usage</p> <p>Note: Standard usage is listed for SLTs that are neither mandatory nor required, but is the standard format if an SLT with the listed message is desired.</p>

Signs, Labels, and Tags

Los Alamos National Laboratory

Attachment 4

Laboratory Implementation Guidance LIG402-100-01.2

Special Language Usage and Meanings

Effective Date: November 19, 1999 (Revised: February 13, 2001)

Nonmandatory Document

Los Alamos

Sign, Label, Tag Request

NATIONAL LABORATORY

This form may be used to request a new sign, label, or tag (SLT) or to request a variation on an SLT in the Laboratory Sign Catalog. The use of the form is not required, but it does include all the information needed. If you are unsure about an item, leave that item blank, and someone will contact you to discuss it. If you have questions, please call 7-5712.

When you have completed the form, forward it to the *Chair of the Laboratory Sign Standards Committee* at Mail Stop M703.

Date Submitted _____

Group/Organization _____

Requester _____

Phone _____

Pager _____

Email address _____

Wording on Sign:

Details of Use

Situation in which the SLT will be used /needed	Harsh Environment? Describe.
Area of Use: Interior <input type="checkbox"/> Exterior <input type="checkbox"/>	Sketch Available? Yes <input type="checkbox"/> No <input type="checkbox"/>
Check Type: Sign <input type="checkbox"/> Label <input type="checkbox"/> Tag <input type="checkbox"/>	Requirement: N/A <input type="checkbox"/> LIR _____ Other _____
Preferred construction material: Metal <input type="checkbox"/> Plastic <input type="checkbox"/> Adhesive-backed vinyl <input type="checkbox"/> Paper/Card Stock/Laminated Paper <input type="checkbox"/> Other <input type="checkbox"/> _____	Proposed Colors: Print _____ Background _____
Proposed for: Site-specific use <input type="checkbox"/> Operation-specific use <input type="checkbox"/> Lab-wide use <input type="checkbox"/>	Expected duration of use: Permanent <input type="checkbox"/> Other <input type="checkbox"/> _____
Other Comments: 	

Signs, Labels, and Tags

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Laboratory Implementation Guidance LIG402-100-01.2

Effective Date: November 19, 1999 (Revised: February 13, 2001)

Attachment 4

Special Language Usage and Meanings

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Attachment 4: Special Language Usage and Meanings

Legend	Characteristics	Meaning
DANGER	White letters within red oval outlined in white on black rectangular background	<ul style="list-style-type: none">• ANSI definition: indicates an imminently hazardous situation that, if not avoided, will result in death.• Not used for property damage warnings unless personal injury risk is also present.• OSHA definition: indicates immediate danger, special precautions are necessary.
WARNING	Orange letters on black background	<ul style="list-style-type: none">• ANSI definition: indicates potentially hazardous situation that, if not avoided, could result in death or serious injury.• Not used for property damage warnings unless personal injury risk is also present.
CAUTION	Yellow letters on black background	<ul style="list-style-type: none">• ANSI definition: indicates a potentially hazardous situation that, if not avoided, may result in minor or moderate injury.• OSHA definition: warns against potential hazards or unsafe practices.
NOTICE	White letters on blue background	<ul style="list-style-type: none">• ANSI definition: indicates a statement of company policy directly or indirectly related to the safety of personnel or for the protection of property.• Not used to indicate a physical hazard.• OSHA definition: provides general instructions and suggestions relative to safety measures.

Signs, Labels, and Tags

Attachment 5

Los Alamos National Laboratory

Suggested Guidelines for Sizes of Signs, Labels, and Tags

Laboratory Implementation Guidance LIG402-100-01.2

Effective Date: November 19, 1999 (Revised: February 13, 2001)

Nonmandatory Document

Attachment 5: Examples of word message letter heights and minimum safe viewing distances.

Minimum Safe Viewing Distance (ft)	Recommended Letter Height for <i>Favorable</i> Reading Conditions (in.)	Recommended Letter Height for <i>Unfavorable</i> Reading Conditions (in.)
4 or less*	0.16	0.336
6	0.24	0.504
8	0.32	0.588
10	0.40	0.840
15	0.60	1.26
20	0.80	1.68
30	1.20	2.12
40	1.60	3.36
60	2.40	4.24
80	3.30	6.72
100	4.00	8.40
125	5.00	10.5
150	6.00	12.6
200	8.00	16.8

* 0.16-in. type is the suggested minimum type size for use on environmental/facility safety signs.

Attachment 6. Instruction Sheet for the Hazards Warning and Control Signs

Purpose	<p>The purpose of the hazard information and entry control signs is to clearly and concisely communicate the hazards and commonly used controls associated with a particular room or building. The target audience for this information is visitors, Laboratory employees not working in the area of the hazards on a daily basis, emergency responders, and others not fully informed about the hazards and controls. Personnel working in the area on a daily basis may need to use controls in addition to those listed on the hazard information sign to manage hazards related to their specific task(s).</p>
Scope/Where to Post	<p>The hazards warning portion of the two-part “Hazard Information for Non-residents” and “Entry Control” signs may be posted at entrances to work spaces that include ES&H hazards and concerns (for example, chemical laboratories). The sign should not apply to offices, computer rooms, or other areas that involve hazards at levels normally accepted by the public. Questions should be referred to an appropriate ES&H professional.</p> <p>This sign should be posted at entrances where it can be easily read, whether the door to the space is open or closed. Large rooms with more than one entrance/exit should have a sign posted at each entry/exit point. If the sign is used on the outside of buildings, it should be protected from the weather.</p> <p>Highlighting or marking should indicate hazards normally present in moderate quantities or levels (see “Definitions” table below for more guidance). Use of this sign does not replace the need for signs, labels, or tags mandated by federal or state law or regulations. Consult an appropriate ES&H professional as the source authority for these specific regulations.</p> <p>If the controls portion (second page) of this sign is used, the controls should be appropriate for hazards in the area and should reflect the minimum requirements applicable to people who enter the area. More detailed information on controls, requirements, and intermittent hazards should be addressed during training or by reference to specific policies, procedures, or permits.</p>
Responsibility	<p>The line manager responsible for the area and work/activities must ensure that the information posted on these signs accurately reflect the hazards and required controls associated with the space (see LIR 402-100-01, Sec. 6.6), in accordance with the “Hazards” and “Hazard Controls” sections of this attachment.</p>
Availability	<p>On-line</p>

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Signs, Labels, and Tags

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Specifications **Size:** 8.5 inches by 11 inches

Color: black lettering on white background, with optional coloring

Material: paper

The paper signs may be enclosed in self-adhesive clear plastic sleeves available from JIT stores (Stock No. L270911)

Implementation To enter information on the sign as described below, type the information or hand-print it with permanent ink.

**Part I:
Hazards
Identification** **Hazards listing.** See Hazards section below for details of specific postings. Consult the appropriate ES&H professional for clarification, as needed.

Highlight or mark each hazard that applies to the area.

Hazards not listed on this sign may be entered at the blank spaces at the bottom of the sign.

**Part II:
Controls** Check each item associated with the controls that apply to the area. Any required controls not listed on the control portion of the sign may be entered at the bottom of the sign.

1. MSDSs. Identify location of the material data safety sheets (MSDSs) associated with work/activities in the area.
2. Controls. Highlight or mark each control generally required to enter the area. This information should reflect the minimum level of protection required. As requirements change for the target audience of this sign, markings on the sign should be corrected.

Detailed controls for specific activities should be used in accordance with procedures, but these detailed controls need not be specified on this sign. (For example, all people entering a laboratory room may be required to wear safety glasses, whereas the employee performing a hazardous operation at a fume hood in that room may be required to wear a face shield. The safety glasses should be noted on the controls portion of this sign; the face shield need not be specified on the sign unless it is required for everyone entering the room.)

3. Procedures. Identify the contact person(s) or position(s), i.e., team leader, who can explain the specific procedures related to activities in the area
 4. Admission restrictions. Identify the contact person(s) or position(s) who can authorize entrance to the area. Highlight this section, if used, to draw attention to the restrictions.
 5. Space for additional information, as needed.
-

Required See Sec. 7 of LIR 402-100-01, "Signs, Labels, and Tags."

Records

Signs, Labels, and Tags

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Records

For More Information

Contact a representative on the Sign Standards Committee (see Attachment 1).

Hazards

Highlighting or marking any of the chemical hazards listed in this section may indicate that the material is present in the area. Highlighting or marking should be used when designated in the minimum indications below as “*any amount*” or when the amount routinely exceeds 1% of the Reportable Quantities, as listed in 10 CFR 302 (this information should also be available on the MSDS for the specific chemical).

Commercial products that are commonly used in the home or office do not need to be posted unless they contain greater than 50% of an ingredient with a National Fire Protection Association (NFPA) rating of 3 or 4 in *any* category of Health—Flammability—Reactivity (the MSDS should have this information).

The following definitions explain the moderate quantities or levels referenced earlier in the Scope section.

Hazard	Definition	Mark if . . .
Biohazard	Human or animal tissues or body fluids, cultures, human or animal waste, domestic sewage, or material contaminated with any of the above.	<i>any amount</i> of any one of these is present in the area.
Carcinogen	A substance regulated as a carcinogen by OSHA or listed as a confirmed or suspected carcinogen by ACGIH. Consult LIR 402-510-01 for more information.	<i>any amount</i> is present in the area.
Cold/hot surface	An area of intense low temperature (less than 0°C or 32°F) or intense hot temperature (> 60 °C/ 140 °F) capable of causing tissue damage on contact.	there are unguarded or exposed surfaces at these temperatures in the area.
Compressed gas	Gas supplied in cylinders or through piping systems stored and used at pressures greater than nominal atmospheric pressure (15 psia; 11.3 psia at Los Alamos elevation). Single containers of a non hazardous gas in the lecture size need not be identified on the hazards warning and controls sign.	vessel pressure exceeds 150 psia in the area. Other markings (toxic, flammable, etc.) also may be needed. Air compressors are exempt from this posting requirement if they meet the pressure vessel code (see LIR 402-1200-01).
Corrosive	A chemical (pH < 2 or >12) that causes visible destruction of or irreversible alterations in living tissue by chemical action at the site of contact.	<i>any material</i> present in the area has a pH of < 2 or >12 (see the MSDS for this information).

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Hazard	Definition	Mark if . . .
Electrical	Exposed energized parts at which the voltage is less than 50 volts and power is greater than 1000 watts, or the voltage is greater than 50 volts and the current is greater than 5 milliamperes, or the stored energy is greater than 10 joules.	exposed energized parts at which the voltage is less than 50 volts and power is greater than 1000 watts, or the voltage is greater than 50 volts and the current is greater than 5 milliamperes, or the stored energy is greater than 10 joules. Additional posting may be required. Contact an appropriate ES&H professional for more information.
Explosive	A material that produces a sudden, almost instantaneous release of pressure, gas, and heat when subjected to abrupt shock, pressure, or high temperature.	<i>any</i> material present in the area has an NFPA reactivity rating of 3 or 4 (see the MSDS for this information) or if it is classified by the Department of Transportation as 1.1, 1.2, or 1.3 (article). Storage magazines have their own posting requirements and are exempt from using the hazard information and entry control signs.
Flammable/combustible	A material that will ignite easily and burn rapidly, or any liquid with a flash point below 100°F.	any material present in the area has an NFPA flammability rating of 3 or 4 (see the MSDS for this information.)
Laser	A device that produces an intense, coherent, directional beam of light (ultraviolet, visible, or infrared). LIR 402-400-01, "Lasers," lists requirements for specific laser signs.	any lasers present in the area are classified as 3 or 4.
Noise	High noise levels above the occupational exposure limit. Hearing damage is a function of frequency, intensity, and duration. Contact an appropriate ES&H professional for specific information.	there are Industrial Hygiene Hearing Conservation Survey recommendations.
Organic peroxide	Organic compounds that contain the peroxy (-O-O-) group and may explode spontaneously.	any material present in the area has an NFPA reactivity rating of 3 or 4 (see the MSDS for this information).
Oxidizer	Oxidizers cause or enhance the combustion of other materials.	any material present in the area has an NFPA reactivity rating of 3 or 4 (see the MSDS for this information).

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Hazard	Definition	Mark if . . .
Oxygen-deficient area	An area in which suffocation is possible when breathable air is replaced by other gases or a vacuum.	any oxygen-deficient condition is identified. Contact an appropriate ES&H professional for more information.
Unguarded equipment	Unguarded equipment that can cut, grind, crush, snare, or similarly injure personnel.	unguarded equipment is present in the area. If equipment is nonoperational, see the Laboratory lock-out and tag-out procedures: LIR 402-860-01 and LIR 402-860-02.
Pressure	A condition where operating pressures are greater than nominal atmospheric pressure (15 psia; 11.3 psia in Los Alamos). High-pressure systems are those that operate at > 5000 psia (liquid) or 3000 psia (gas). Note: See LIR 402-1200-01 for details on pressure systems.	unshielded (material fragments not contained in case of explosion of fragmentable container) exposure to pressure is possible in the area.
Radio-frequency/microwave	Electromagnetic radiation in the frequency range of 1-300 GHz. Note: Magnetic fields as low as 10 gauss may affect pacemaker wearers.	exposures above the IEEE C95.1-1999 Standard (available in Laboratory main library) are present in the area. Contact an appropriate ES&H professional for more information. Note: Commercial microwave ovens are exempt from these posting requirements.
Reactive	A chemical substance or mixture that will vigorously polymerize, decompose, condense, or become self-reactive because of shock, pressure, or temperature.	if any material present in the area has an NFPA reactivity rating of 3 or 4 (see the MSDS for this information).
Reproductive toxin	A substance that is known to manifest itself in lethal effects on the fertilized egg, developing embryo, or fetus or in teratogenic (malformation) effects in the fetus. In addition, certain reproductive toxins may cause infertility in males or females. Consult LIR 402-530-01 or contact an appropriate ES&H professional for more information.	<i>any</i> amount is present in the area.
Toxic	A material that has the ability to injure biological tissue. Harmful effects depend on the toxicity, the route of exposure, and the duration of contact. ESH-5 can provide more specific information.	any material present in the area has an NFPA health rating of 3 or 4 (see the MSDS for this information).

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Hazard	Definition	Mark if . . .
Ultraviolet light (UV)	Electromagnetic radiation in the range of 180 to 400 nanometers. Health damage is a function of frequency, intensity, and duration.	unguarded exposure to any ultraviolet radiation is possible in the area.
Vacuum	A condition where operating pressures are less than nominal atmospheric pressure (15 psia; 11.3 psia in Los Alamos).	unshielded (material fragments not contained in case of implosion of fragmentable container) exposure to vacuum is possible in the area (see LIR 402-1200-01).
Water reactive	A material that reacts violently with water or, when mixed with water, a material that generates toxic gases, vapors, or fumes in sufficient quantity to present a danger to human health or the environment.	material present in the area has an NFPA reactivity rating of 3 or 4 (see the MSDS for this information).
Welding equipment	See AR 8-4 for additional information.	unguarded equipment is being used in the area.

The following definitions explain the controls referenced earlier in the Implementation section.

Hazard Controls	Control	Definition
	Apron	A protective covering designed to protect the front of the body from chemical hazards in nonradiological areas.
	Hearing protection	A personal protective device to reduce exposure to noise.
	Face shield	A plastic covering to protect the face. Face protection must meet ANSI Z87.1 Standard (available in Laboratory main library) to be used in posted area.
	Gloves	Natural or synthetic material to protect the hands from temperature extremes or chemical exposures. Contact an appropriate ES&H professional for information on the suitability of gloves for specific use.
	Hard hat	A rigid covering for the head that conforms to ANSI Z89.1 Standard.
	Lab coat/covering	A protective covering to protect the body from chemical hazards in nonradiological areas.
	Respirator	Masks or respirators used to reduce the inhalation of hazardous substances. Contact an appropriate for information on the suitability of respirators for specific use.
	SCBA	Self-contained breathing apparatus. Contact an appropriate ES&H professional for information on the suitability of SCBAs for specific use.
	Safety glasses/goggles	Personal protective devices that protect eyes and the areas surrounding the eyes. Eye protection must meet ANSI Z87.1 Standard (available in Laboratory main library).
	Safety footwear	Footwear used to prevent or reduce injuries to feet. This includes conducting, electrical hazard, and steel-toed safety shoes and boots, in accordance with ANSI Z41. Footwear with metatarsal guards is used to protect those portions of feet other than toes.

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HAZARDS INFORMATION FOR NON-RESIDENTS

Electrical

50-600 volts
>600 volts
>20 amperes
>10 joules

Pressure

High pressure
Vacuum
Compressed gas
cylinders
piping

Fire

Flammable substances
Combustible substances
Water-reactive materials

Radiation (ionizing)

(See specific radiological posting)

Atmosphere

Oxygen deficient
Cryogenics

Physical

Elevation
Tripping
Low clearance
Confined space
Cold/hot surface
Open flame
Noise
impulse
intermittent
steady

Radiation (non-ionizing)

Radio-frequency
Ultraviolet
Laser: class____

Welding MIG/TIG

Oxy-acetylene

Chemical

Corrosive
acid
base
Toxic
Carcinogenic
Reproductive

Reactive
Explosive
Organic peroxide
Oxidizer

Unguarded equipment

Rotating equipment
Drills/presses
Saws/planners

Biohazards

Human body fluids
Animal fluids/waste
Sanitary waste/sewage
Bio-cultures/R&D

Other hazards: _____

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ENTRY CONTROLS

Eye protection

Safety glasses
Safety goggles
Face shields

Safety footwear

Steel-toe safety shoes
Steel-toe safety boots
Conductive
Electrical hazard
Metatarsal guards

Special clothing

Chemical labcoat
Impenetrable apron
Tyvex-type coveralls

Head protection

Hard hat

Hearing protection

Ear muffs
Ear plugs

Respiratory protection

SCBA
Respirator: type ____

Gloves

Chemical: type _____

Other hazards:

[] Procedures governing hazardous operations in this area may be obtained by contacting

_____ at _____.

[] Admission restricted. Permission to enter this area must be obtained by contacting

_____ at _____.

[] _____

(Refer to specific radiological posting)

Los Alamos National Laboratory